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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,238	01/26/2004	Jun Hirose	247640US3 CONT	6690

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
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ALEXANDRIA, VA 22314

EXAMINER
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ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/12/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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## Office Action Summary

Application No.

10/763,238

Applicant(s)

HIROSE ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 15 recites the limitation "cut end portion". There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 11, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch; Michael D. et al. (US 6,192,827 B1) in view of Osaka et al (JP11-037315). Welch teaches a deposit shield (50; Figure 3B; "chamber liner") for use in a processing apparatus (Figure 1; column 2; lines 10-21), in which a substrate to be processed is mounted on a stage (220; Figure 5; column 6; lines 59-67) serving as a lower electrode (grounding path teaches cathode electrode – column 8; lines 1-13), and which is provided in a vacuum processing chamber (24; Figure 1; column 4; lines 10-21) wherein plasma processing using an upper electrode (44; Figure 2) provided on the substrate is to be performed, the deposit shield (50;

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Figure 3B; “chamber liner”) comprising: a side curved-surface portion (50; Figure 3B; “chamber liner”) which extends from a position lateral to a mounting surface of the stage (220; Figure 5; column 6; lines 59-67) to an outer periphery of the upper electrode (44; Figure 2), which is spaced apart from an outer periphery of the stage (220; Figure 5; column 6; lines 59-67), and which has a fiat inner surface located to surround the stage (220; Figure 5; column 6; lines 59-67); a notch portion (94,96; Figure 9,10) located opposite to a carrier port (54; Figure 2; column 4; lines 22-40) which is provided at the processing chamber (24; Figure 1; column 4; lines 10-21) to allow the substrate to be carried out from and into the processing chamber (24; Figure 1; column 4; lines 10-21), the notch portion (94,96; Figure 9,10) being formed in a lower portion of the deposit shield (50; Figure 3B; “chamber liner”); a shutter (60; Figure 2; column 4; lines 22-40) including an end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) which is shaped to be fitted to a cut end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the notch portion (94,96; Figure 9,10) such that the end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the shutter (60; Figure 2; column 4; lines 22-40) and the side curved-surface portion (50; Figure 3B; “chamber liner”) have a continuously even and curved inner surface (Figure 3B), the shutter (60; Figure 2; column 4; lines 22-40) functioning to maintain uniformity of a density of plasma generated in the plasma processing; a raising/lower portion (all elements except 60; Figure 6) which raises/lowers the shutter (60; Figure 2; column 4; lines 22-40) when the substrate is carried out from and into the processing chamber (24; Figure 1; column 4; lines 10-21) – claim 11. Applicant’s claim requirement of “the shutter functioning to maintain uniformity of a density of plasma generated in the plasma processing” is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that

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simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Welch further teaches:

- i. The deposit shield (50; Figure 3B; "chamber liner") according to claim 11, wherein: the cut end portion (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the notch portion (94,96; Figure 9,10) and the end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the shutter (60; Figure 2; column 4; lines 22-40) have respective L-shaped step portions (60/94+96 interface contour; Figure 9,10) which are fitted to each other; an inner peripheral portion of the L-shaped step portion (60/94+96 interface contour; Figure 9,10) of the cut end portion (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the notch portion (94,96; Figure 9,10) extends, and an outer portion part of the L-shaped step portion (60/94+96 interface contour; Figure 9,10) of the end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the shutter (60; Figure 2; column 4; lines 22-40) extends; and plasma generated in the processing chamber (24; Figure 1; column 4; lines 10-21) is prevented from leaking between the notch portion (94,96; Figure 9,10) and the end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the shutter (60; Figure 2; column 4; lines 22-40), as claimed by claim 15. Applicant's claim requirements

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of “and plasma generated in the processing chamber is prevented from leaking between the notch portion and the end face of the shutter” is a claim requirement of intended use. The prior art’s hermiticity requirement demonstrates that the prior art is capable of performing the intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Welch does not teach:

- i. an O-ring fitted in the end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the shutter (60; Figure 2; column 4; lines 22-40) which is fitted to the cut end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the notch portion (94,96; Figure 9,10); and a spiral seal fitted in the end face (60/94+96 interface; Figure 2,10; column 4; lines 22-40) of the shutter (60; Figure 2; column 4; lines 22-40), located closer to an outer periphery of the shutter (60; Figure 2; column 4; lines 22-40), and formed of metal to effect electrical conduction on the shutter (60; Figure 2; column 4; lines 22-40) – claim 11
- ii. The deposit shield (50; Figure 3B; “chamber liner”) according to claim 11, in which the spiral seal causes the deposit shield (50; Figure 3B; “chamber liner”) and the shutter (60;

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Figure 2; column 4; lines 22-40) to be electrically connected to each other, so that the deposit shield (50; Figure 3B; “chamber liner”) and the shutter (60; Figure 2; column 4; lines 22-40) have the same potential, and also prevents the plasma generated in the process chamber (24; Figure 1; column 4; lines 10-21) from leaking from the deposit shield (50; Figure 3B; “chamber liner”) through a gap in the notch portion (94,96; Figure 9,10), which is present between the deposit shield (50; Figure 3B; “chamber liner”) and the shutter (60; Figure 2; column 4; lines 22-40), as claimed by claim 12

Osaka teaches a gate valve shutter (32) with a groove (32/33 contour; Figure 2, 5) for fitting an o-ring (33 – see corresponding element on the other side of 32). The groove is shown to have a cross section having a square outer periphery.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Welch to add shape-compliant grooves around Welch’s shutter to thereby accommodate an O-ring as taught by Osaka, further, to reproduce Welch’s

Motivation for Welch to add shape-compliant grooves around Welch’s shutter to thereby accommodate an O-ring as taught by Osaka is to provide for a better hermetic seal between Welch’s gate valve and seat therefore as taught by Osaka (“[Description of the Prior ART]”; Machine Translation).

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Welch; Michael D. et al. (US 6,192,827 B1) and Osaka et al (JP11-037315) in view of Hamrah et al (USPat. 5,242,538). Welch, and Osaka are discussed above. Welch, and Osaka do not teach:

- i. The deposit shield (50; Figure 3B; “chamber liner”) according to claim 11, wherein a disk-shaped evacuation plate is provided around the stage (220; Figure 5; column 6; lines

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59-67), and when the shutter (60; Figure 2; column 4; lines 22-40) of the deposit shield (50; Figure 3B; "chamber liner") is raised, the shutter (60; Figure 2; column 4; lines 22-40) and the evacuation plate are brought into contact with each other, and electrically connected to each other, as claimed by claim 13

Hamrah teaches a similar plasma processing apparatus (Figure 2) including a disk-shaped evacuation plate (96; Figure 2; column 3, lines 14-29) disposed around the stage (70).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a disk-shaped evacuation plate disposed around Welch's support stage as taught by Hamrah.

Motivation to add a disk-shaped evacuation plate disposed around Welch's support stage is to direct exhaust flow as taught by Hamrah (column 3, lines 14-29).

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Welch; Michael D. et al. (US 6,192,827 B1) and Osaka et al (JP11-037315) in view of Steger et al (USPat. 5,788,799). Welch and Osaka are discussed above. Welch and Osaka do not teach the deposit shield (50; Figure 3B; "chamber liner") according to claim 11, wherein the deposit shield (50; Figure 3B; "chamber liner") and the shutter (60; Figure 2; column 4; lines 22-40) include respective heating mechanisms, as claimed by claim 14

Steger teaches a similar plasma apparatus (Figure 1) including a chamber liner (102; column 6, lines 18-29) comprising a heating mechanism (110, Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a heater in Welch's liner as taught by Steger.



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Motivation to add a heater in Welch's liner as taught by Steger is to provide for thermal protection of the liner (column 6, lines 18-29).

*Response to Arguments*

8. Applicant's arguments with respect to claims 11-15 have been considered but are moot in view of the new grounds of rejection.

*Conclusion*


9. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to

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the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Handwritten signature and date. The signature is written in cursive and appears to be "Parviz". Below the signature, the date "3/5/7" is written in a stylized, handwritten format.